

Effects of Defensive Vehicle Handling Training on Novice Driver Safety:

Phase 3. Year 1 Interim Report

by

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EXECUTIVE SUMMARY

This project is a three-phase effort to evaluate the potential effectiveness of a multistage driver education program for Montana young drivers. The project objectives are being realized by comparing the safety experience of two groups of teenaged drivers, in which one group received additional instruction in a defensive driving workshop; the other group did not. Phase 1 efforts included selection and recruitment of participants and development of training materials. Phase 2 efforts concentrated on three major areas, final preparation for training, collection of driving experience data, and the presentation of the training to the teen drivers. Phase 3 is a follow-up longitudinal study of the driving experiences and safety of the Phase 2 participants. This interim report summarizes the work done on the project through the period beginning one year after the date of the defensive driving training workshops and includes analyses of safety-related data collected to date.

Approximately one-third of all participants in this study experienced traffic crashes during the initial one-year reporting period following the workshop instruction. This included 31% of the young drivers who had received the defensive driving workshop and 35% of those who did not receive the added training. There was a much larger difference between the two groups in the number of traffic violations reported. Approximately 31% of the drivers who received the workshop training reported being stopped for traffic violations while 45% of the drivers who did not take the training reported receiving tickets or warnings. These differences were consistent with the originally hypothesized effects of a multistage driver training approach.

1. INTRODUCTION

Young teenaged drivers have a considerably higher crash rate than any other age group with new teenaged drivers having the highest crash rates of any group of drivers. Concurrently, research has found no clear evidence that traditional high school driver education programs have a positive impact on safe driving. To address this issue, some experts have recommended a multistage training approach in which the traditional training is later supplemented by a carefully designed advanced training program. Such an approach is advocated by the American Driver and Traffic Safety Education Association (Robinson, 2001) as part of a graduated licensing system in which, "Initial training of novice drivers will provide basic vehicle handling skills and the second training course will provide other safe driving skills, including enhanced decision making to reduce the risk of young drivers."

This project is a three-phase effort to evaluate the potential effectiveness of such a multistage program for Montana young drivers. Phase 1 efforts included selection and recruitment of participants and development of training materials. Phase 2 efforts concentrated on three major areas, final preparation for training, collection of driving experience data, and the presentation of the training to the teen drivers. Phase 3 is a follow-up longitudinal study of the driving experiences and safety of the Phase 2 participants.

During Phase 1, approximately 400 teenaged drivers who had completed high school driver education agreed to participate in the study. The drivers were randomly and evenly divided into a treatment group who received the defensive driving workshop and a control group who did not.

During Phase 2, the young drivers in the treatment group completed a detailed questionnaire developed by the Montana Office of Public Instruction concerning their driving experience since completion of drivers' education classes. They then completed approximately 9 hours of instruction in the classroom setting and behind the wheel. These activities were all done at a driver training facility in Lewistown, Montana. More detail about these activities can be found in Kelly and Stanley (2006). The half of the teen drivers who were not drawn to take part in the training workshops were mailed survey forms that were identical to those completed by the students at Lewistown. Approximately 350 usable responses to the questionnaire were received from the two groups.

During Phase 3, the driving experiences of the trained and non-trained drivers are being followed for a period of four years. Using the OPI-developed written questionnaires mailed to each participant, reports of the crash and violation history of the participants were obtained. This interim report summarizes the work done on the project for the period beginning one year after the date of the defensive driving training workshops and includes analyses of safety-related data collected to date.

2. BACKGROUND

The Experience of Young Drivers

Each year, roadway crashes take the lives of approximately 40,000 people and seriously injure approximately 3 million in the United States (U. S. Department of Transportation, 2005). The costs of these crashes approach \$200 billion.

Teenaged drivers have a considerably higher crash rate than any other age group. Figure 1 shows that drivers under the age of 20 have a crash rate four times that of the general driving population (Williams, 2003). New teenaged drivers have the highest crash rates of any group of drivers. The highest crash rate is experienced within 2 years of receiving the driving license. As expected, the crash rate decreases with driving experience and increased maturity. Research is needed to determine how to safely equip novice drivers with the important elements of experience before they encounter a need for it in an actual driving situation. Many novice drivers' crashes involve improper reactions to skids, panic stops, run-off-pavement, and other unusual situations unfamiliar to the young driver. Other crashes can partially be attributed to lifestyle issues such as risk-taking, risk-seeking, peer pressure and approval, distraction, and substance abuse.

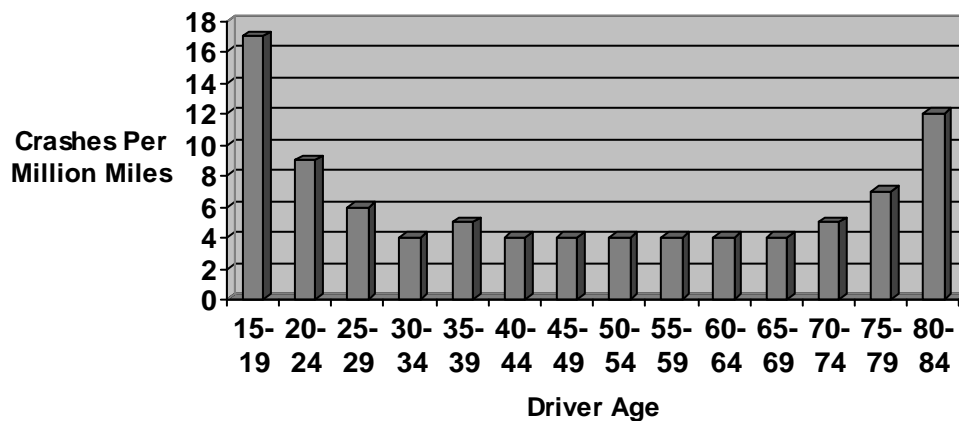


Figure 1: Crash rate by driver's age.

In the United States, most driving training is provided informally by parents or, more formally, in high school affiliated classes. These classes require numerous hours (typically 30) of classroom instruction on rules of the road, vehicle operation, and safety. The nascent drivers then spend several hours (typically 6) behind the steering wheel driving in parking lots or in normal traffic on familiar streets. Only rarely do they experience circumstances in which the vehicle must be handled at its performance limits.

Driver education in European countries is much more rigorous than that in the United States. Classroom training is presented on vehicle operating principles and basic maintenance. Typically, behind-the-wheel training provides more emphasis on the more advanced aspects of vehicle handling in potentially hazardous conditions. Classroom training provides more emphasis on cognitive factors such as risk perception. Also, the minimum age for driver

licensing (typically 18 years) is usually higher than the ages mandated by the States in the United States (Siegrist, 2003).

Several organizations in the United States offer training in advanced vehicle handling for novice drivers (Car Control, (n.d.) a). Such training is intended to supplement basic driving classes and typically includes vehicle control on skid pads, obstacle avoidance, rapid deceleration braking, and maneuvering near the vehicle performance limits. While there is considerable anecdotal evidence that such training, added to the standard driver instruction, creates a more skilled and capable novice driver few systematic studies of its effect on the safety of young drivers have been completed. Where such studies have been done, results are contradictory and subject to interpretation and controversy.

Research on Driver Training

Many questions have been raised concerning the effectiveness of conventional young driver's education programs. A former researcher at the Insurance Institute for Highway Safety, Williams (2003) declared these short-term programs as unrealistic approaches to increasing the safety of young drivers. On the contrary, a recent study conducted by the Oregon Department of Transportation (ODOT) and the Center for Applied Research found "significantly lower rates of convictions, suspensions and crashes" for those taking the driver education course versus those who learned through 50 hours of informal, supervised training (Triplett, 2005).

International literature demonstrates little proof that formal driver instruction increases driver safety, yet arguably these programs have failed to adequately address age and experience related factors that contribute to young driver's increased risk of crashes. It is believed that such programs can be more effective if they are more empirically based, addressing the age and experience related factors (Mayhew and Simpson, 2002). Mayhew and Simpson state the reasons why formal instruction fails to reduce crashes:

- Driver education/training fails to teach the knowledge and skills critical for safe driving,
- Driver education does teach safety skills but students are not motivated to use them,
- Driver education fosters overconfidence,
- Driver education fails to adequately address lifestyle issues, and
- Driver education fails to tailor content to student needs.

The well-known Dekalb driver education study, conducted in suburban Atlanta, was one of the first attempts to systematically validate the benefits of driver education (Stock, et al., 1983). A cohort of 16,000 high school students was examined. The participants were divided into three groups based on the training they received, i.e., no training at all, a minimal curriculum of 20 hours of training, or a Safe Performance Curriculum (SPC) of 70 hours of training. The SPC curriculum was based on a task analysis of required driver skills but little information survives about how it was conducted. The bottom line finding was that there was no statistically significant difference between the training groups in driving safety after the first six months after completion. One observation was that drivers in the "no training" group delayed obtaining their driver's licenses as compared to drivers in the other groups. The methodology has generated

considerable subsequent debate, especially concerning the possible lack of equivalency of the three groups and the inadequacy of the selected null hypothesis statistical testing (NHST) statistical model to show differences between them. Despite its limitations, this classic study has widely been considered the definitive evaluation and used as evidence to support the subsequent defunding of many high school driver education programs.

Mayhew and Simpson (2002) completed a synthesis of research related to safety benefits of young driver training. They concluded that the major effect of traditional, school-affiliated driver education programs is to make licensing more readily available to younger drivers. They found no clear evidence that these traditional programs have a positive impact on safe driving. The authors recommended a multistage training approach in which the traditional training is later supplemented by a carefully designed advanced training program that:

- Is focused on psychomotor, cognitive, and perceptual skills shown to be associated with high collision rates among young drivers,
- Includes experiences demonstrating the value of safe driving practices,
- Incorporates experiences that make the drivers more aware of their own limitations,
- Uses techniques developed to address lifestyle and risk-taking behaviors, and
- Recognizes that there are individual differences in skill levels and addresses specific skill deficiencies of the individual participants.

Such an approach is advocated by the American Driver and Traffic Safety Education Association as part of a graduated licensing system in which, "Initial training of novice drivers will provide basic vehicle handling skills and the second training course will provide other safe driving skills, including enhanced decision making to reduce the risk of young drivers (Robinson, 2001)."

A study of over 400 graduates of an urban, east coast course for young, previously licensed drivers reported that the graduates had 77% fewer crashes than their peers (Car Control, (n.d.) b). That number, however, was probably inflated by a weak research design in which the more careful and highly motivated teens were self-selected into the training classes. A much more carefully designed and controlled study was needed to validate those striking results.

Skill-based training has created much discussion among driver education experts. Research has shown that skill based strategies may produce overconfidence of one's own skills (Gregersen 1996a). For example, Glad (1988) found that those partaking in skid training, as a mandatory part of the training, had an increase in slippery road crashes. Another study found that after the introduction of skid training into the education curriculum, higher rates of crashes occurred in slippery road conditions (Keskinene et al., 1992). It is believed that many skid training courses were based on maneuvering skills, leading to overconfidence. To counter this effect, it has been suggested that a distinction be made between training of skills and training of risk-awareness. Skill-based training concerns understanding vehicle control and maneuvering while risk-awareness is designed to increase knowledge, experience and recognition of dangers (Gregersen, 1996b; Advanced, 2003). A study on the effectiveness of skid-car training for teenage novice drivers in Oregon found that females who received skid-car training had no change in crash rates, while the males appeared to have higher rates in the two years after training. However it did appear that those receiving the training had relatively fewer slick surface and rear-end collisions (Jones, 1995).

The European Union (EU) Advanced project (2003) developed several recommendations for post license driver training. These recommendations were not objectively based but were based on the consensus of the researchers and investigators working in the area. The general recommendations include:

- Courses should focus on the specific needs of the participant and encourage them to improve their driving style and behavior,
- Track based driver courses should focus more on risk awareness than on maneuvering skills,
- Comprehensive feedback and discussion sessions should be conducted after each on-road exercise,
- To maintain individual attention group size should not exceed 10 participants per instructor during track-based courses,
- Training must be relevant to real-life situations, exercises and discussion should be related to real life scenarios,
- Overconfidence should be avoided, this is done by allowing students to fail (i.e. hit obstacles, lose full or temporary control of the vehicle), and
- Good client-trainer relations should be established to have the greatest influence on the participant throughout the course.

Graduated licensing programs have been shown to significantly reduce young driver crashes and fatalities (McKnight and Peck, 2002). While these programs don't necessarily improve the skills of young drivers, they do reduce their miles of driving and their exposure to peer pressure and hazardous driving conditions during their early driving years (Fohr, et al., 2005). During the 2005 legislative session, a form of graduated licensing was instituted for Montana. Since implementation only began in 2006, it is too early to determine whether the expected benefits will materialize.

3. METHODOLOGY

Approximately 400 teenaged drivers who had completed high school driver education agreed to participate in this study. These drivers were randomly split into two groups of approximately equal size. One group received additional instruction in a defensive driving workshop; the other group did not. Their subsequent driving safety experience over the following four year period is being tracked to assess whether or not the additional driver training has an impact on their safety. The large size of the sample and random assignment of the participants to the control and treatment groups will allow for this assessment of cause and effect to be confidently made.

Overview of Training

The Montana Office of Public Instruction (OPI) scheduled Lewistown Driver In-Vehicle Education (D.R.I.V.E.) facilities and instructors for 18 one-day sessions during the summer of 2005. Each day, 12 young drivers were scheduled to take the training workshops in Lewistown. The Western Transportation Institute (WTI) contracted with school bus providers for the Great Falls and Billings school districts to provide transportation to and from Lewistown. Students from Harlem were bussed by their high school, which does not contract out its transportation services. Students from Lewistown and the surrounding communities provided their own transportation to the training facility.

At the training facility, the young drivers completed a subject consent form and a detailed survey concerning their driving experience since completion of drivers' education classes. They then completed approximately 9 hours of instruction in the classroom setting and behind the wheel. At the completion of the day's training, each student received a tailored "report card" concerning their driving performance and exercises they could do on their own to improve it. The training is presented in more detail in Kelly and Stanley (2006).

The half of the teen drivers who were not drawn to take part in the training workshops were mailed survey forms that were identical to those completed by the students at Lewistown and asked to complete and return them to WTI.

Driving History

After all students were finished with the pretest, they proceeded to the classroom for opening classroom activities where they completed a human subject consent form. The detailed young driver survey completed by the participants regarding their driving experience since completing their drivers' education class was developed by the Montana OPI. The questionnaire was tailored to ask those questions that correlate highly to teen crash involvement, as determined from teen crash data. Information solicited by the survey included:

- The number of hours/week they usually drive,
- The number of passengers (and age classification) in vehicle and how often they have passengers in their car,
- Type of vehicle driven,
- Time of day they usually drive,
- History of traffic citations and warnings,

- History of near miss crashes,
- History of single vehicle crashes, and
- History of multiple vehicle crashes.

The survey, itself, is shown in Figure 2.

Classroom Instruction

Upon completing the young driver survey and receiving the student folder of instructional materials the students that received the defensive driving workshop were taken to the Montana D.R.I.V.E classroom training facility. Training is described in detail by Kelly and Stanley (2006). Here students received two classroom periods (morning and afternoon) led by a classroom instructor. Both the morning and afternoon classroom instruction included PowerPoint presentations. The purpose of these presentations was to inform the students of driver readiness with reference to seat adjustment, mirrors, driver position use of the 'dead pedal', seat belts, balanced hand position on the wheel, and windows up.

Brief overviews of the material presented in the classroom sessions are provided below:

- Morning Classroom- "Montana Teen Class Phase I" presentation was provided to facilitate the lecture. Further demonstrations were provided with regards to the effects of high speeds on losing control of the vehicle. This included using a small "frisbee" type saucer and match box cars to demonstrate the effects of speed on friction of the vehicle's wheels. A slide by slide explanation of the Montana Teen Class Phase I PowerPoint presentation as lectured to the students was previously provided to MDT in the Training Materials.
- Afternoon Classroom - "Montana Teen Class Phase II" presentation was provided to facilitate the lecture. No further demonstrations were provided. A slide by slide explanation of the Montana Teen Class Phase II PowerPoint presentation as lectured to the students was previously provided to MDT in the Training Materials.

Integrated with the PowerPoint presentations were two interactive sessions using E-book activities, one in the morning and the other in the afternoon. Within the two E-book periods were imbedded video clips demonstrating principles discussed. Provided in the E-book were interactive grids where students were to mark their answers to questions that were posed to them on principles discussed. Upon completion, students could check their answers with the provided answer sheets.

YOUNG DRIVER SURVEY

Name (as appears on driver license) _____ Driver License # _____

Address _____ City/State _____ Zip _____

Gender: M F Date of Birth _____ How long have you been driving? Years _____ Months _____

1. What city/school did you receive driver education? _____
2. How many hours a week do you usually drive? Check one: Under 2__ 3-5__ 6-10__ 11-15__
16-20__; more than 20__
3. How often do you have passengers in your vehicle?
Check one: Daily__ Weekly__ Seldom__
Are passengers usually (check all that apply)
family__ non-family__ teens__ adults__
On average how many passengers each trip? _____
4. What type(s) of vehicles do you usually drive? Check ones that apply:
Car: Small__ Medium__ Large__
SUV: Small__ Medium__ Large__
Pickup: Small__ Medium__ Large__
Other__ Describe _____
5. What hours of the day do you usually drive? Check ones that apply: 6am – noon __;
Noon – 6 pm__; 6 pm – 9 pm__; 9 pm – mid-night__; Mid-night- 6am__
6. In the past year have you received any of the following legal citations; if so how many?
Moving violations (tickets) _____; Moving warnings _____; MIPs _____
DUIs _____; Suspended license _____
Other__ Describe _____
7. In the past year, have you had any near miss crashes; if so how many? _____
Describe your near misses, if any. _____

8. In the past year have you had any single vehicle crashes (yours was the only vehicle involved), such as
running off the road? If so, how many? _____
Briefly describe: _____

9. In the past year have you had any multiple vehicle crashes (yours was not the only vehicle involved); if so
how many? _____
List and briefly describe the crashes, if any _____

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Figure 2: Survey Questionnaire

A picture of the classroom instruction portion at the Montana D.R.I.V.E training facility has been provided in Figure 3. The classroom used is a retired driver simulator trailer about 12' wide and 40' long. Three computers were set-up to deliver the E-book training. A fourth computer was used to deliver the PowerPoint. Students sat in inactive simulator stations during the classroom instruction.



Figure 3: Instructional classroom at Montana D.R.I.V.E. training facility.

Additional classroom instruction was completed out-of-doors at the Montana D.R.I.V.E training facility to allow students more arm and leg room to practice maneuvers as instructed.

Behind-the-Wheel Instruction

Behind-the-wheel instruction utilized three sedans equipped with SkidMonsters, a proprietary device used to teach vehicle control and skid recoveries. Two other sedans were equipped with levers to activate rear brakes. An additional regular sedan and a mid 1990s SUV were used to teach reference points and off-road recovery. Figure 4 shows a vehicle equipped with the SkidMonster technology.



Figure 4: Student participating in SkidMonster behind-the-wheel instruction.

The two lever equipped skid sedans were used in pre- and post-instruction skid assessments. The three SkidMonster vehicles were used to teach behaviors and skills related to the “10 Habits” documented by Mottola (2003). The driving track used was a paved “Monster Pad” that is 200’ by 600’.

At the conclusion of the behind-the-wheel instruction, instructors took the students to the skid pad and divided the group into two teams. They then had a ‘road rally’ with each team member driving through the course in a timed event that included all aspects of training covered throughout the day. Rules and separate grade sheets were given beforehand so the drivers would know what to expect.

Anecdotal reports from students that went through the workshop indicated that they felt more relaxed and confident about their driving ability. Instructors reported “they made great strides showing improvement in the post-test of front/side limitations and skids; and, they also understood the importance of controlling the four-second-danger zone and keeping the vehicle in balance”. Overall, the students gained valuable knowledge and skills with regards to driving and became more confident in their ability to handle various driving situations. Analysis of the

vehicle handling scores, especially skid recovery showed significant improvement in vehicle handling between the pre-testing and the post-testing.

Collection of Safety Data

As previously discussed, during the initial year of the study while training was being conducted, participants completed a written survey (Figure 2, page 8) of their driving experience that was developed by the Montana Office of Public Instruction. Participants who did not take part in the training were mailed the questionnaire during the same timeframe and reimbursed for their time in completing it.

At the end of the first year after the defensive driver training was conducted, an identical survey covering the year ending in August 2006 was mailed to the study participants. They were reimbursed with a \$20 payment for their time in completing and returning the survey. Approximately 350 surveys were mailed with a goal of obtaining an 80% return rate.

On the initial mailing, approximately 180 usable surveys were returned for a response rate of about 55% usable surveys. An additional 12 surveys were returned by the post office as undeliverable. A second mailing was sent to the non-responders with another copy of the survey form and a reminder letter. Follow-ups were also sent to participants who had moved and had valid forwarding addresses. Another 50 responses were received to this mailing bringing the return rate for usable forms to approximately 68%, still below the goal of 80%.

In October 2006, a third mailing of forms and a reminder letter were sent to those who had not yet responded. A return of 44 responses to that mailing brought the return rate to 278, reaching the desired 80%.

The need to send three mailings and wait for responses in order to obtain the desired response rate was not anticipated and caused considerable delay in the progress of Phase 3 of the project. Based on this experience, multiple mailings and reminders will be planned for as data is collected in future study years.

Develop Data Base for Archiving and Analysis

During year 1, all survey data were obtained in written form on paper but were not electronically archived. Because of the expected volume of data, a hardcopy data base would have become unwieldy for archiving and analyzing data. An electronic data base allowing for continual update of contact information for participants and to record their information was needed. In order to support archiving and analyzing the data, an EXCEL based spreadsheet was developed to record all of the data obtained in 2005, in 2006, and in future years.

Data provided by the participants during year 1 (2005) were transferred from their paper forms onto the EXCEL data sheet. The EXCEL data base contains names and updated mailing addresses of all participants and the driving experience data they report each year. It is suitable for preparing mailing labels for contacting participants as well as archiving/analyzing data. As written forms were received from participants, the data they submitted was entered for analysis.

4. RESULTS

Preliminary analyses were conducted on the 2005 data to document the experience and history of the young drivers in their first months after high school driver training and to further ensure that the treatment group and the control group were equivalent before the defensive training workshops were presented. During the initial driving period, approximately 18% of the drivers in both groups reported experiencing crashes. Approximately 17% of the treatment group and 19% of the control group were given traffic citations or warnings. These data serve to demonstrate that using the random group assignment, the groups were equivalent before the training workshops. This observation will be further validated in the future through additional analyses of the various other data on individual driving habits and experience collected from the project participants.

Preliminary analyses were then performed on the 2006 data (the first year following the added defensive driving workshops). During this time, approximately one third of the young drivers reported having a single-vehicle or multiple vehicle crash. This includes 40 of 127 (31%) of the young drivers who received the defensive driving training and 52 of 149 (35%) of those who did not. Figure 5 shows this difference. Two additional responses were received from young drivers who had completed driver training but had not yet obtained a driver's license.

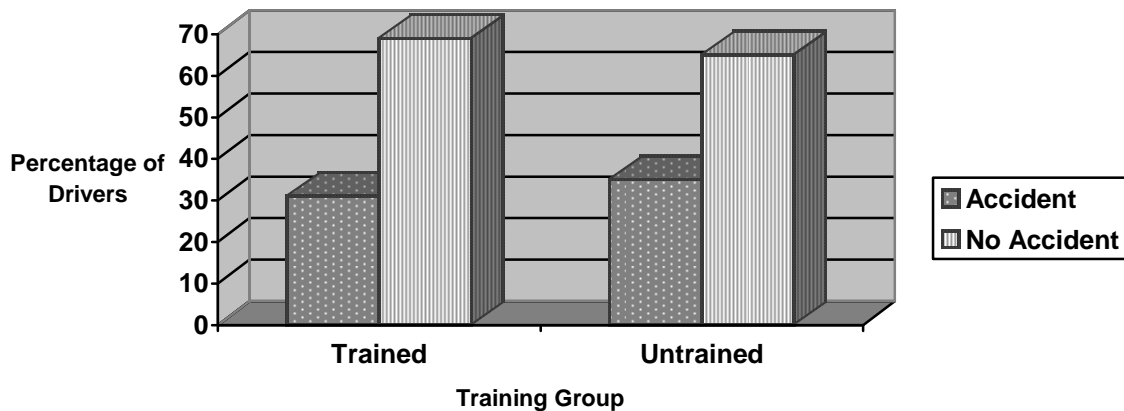


Figure 5: Percentage of Drivers Experiencing Crashes.

A large proportion of these crashes involved no injuries and minimal or no damage and, as such, were not reported to authorities. These included such reports as:

“Avoided a deer but ran into the snow bank,”

“I was backing a car up (not mine) and slightly squashed another car’s license plate,”

“The person in back of me bumped into the back of me. No damage,”

“It was icy and my car spun 180 degrees and ran off the road,”

“I backed into a light pole and got a small dent in my fender,” or

“I slid off of the road into a snow bank”.

Having a crash does not perfectly correlate with driving skill. Crashes may be fully or partially attributable to behavior of another driver, such as a rear-end collision or a swerve to miss another car that had left its lane. Perhaps the number of traffic violations (citations or warnings) is better correlated with defensive driving skills and safety behavior than the frequency of crashes since these are based on direct expert observation of illegal or hazardous driving.

Participants reported the number of times that they had received a traffic citation or warning from police officers. Graduates of the defensive driving training workshop appear to be stopped for traffic violations less frequently than their untrained peers. Approximately 31% (39 of 127) of the trained drivers and 45% (67 of 149) of the non-trained drivers reported receiving citations or warnings (Figure 6).

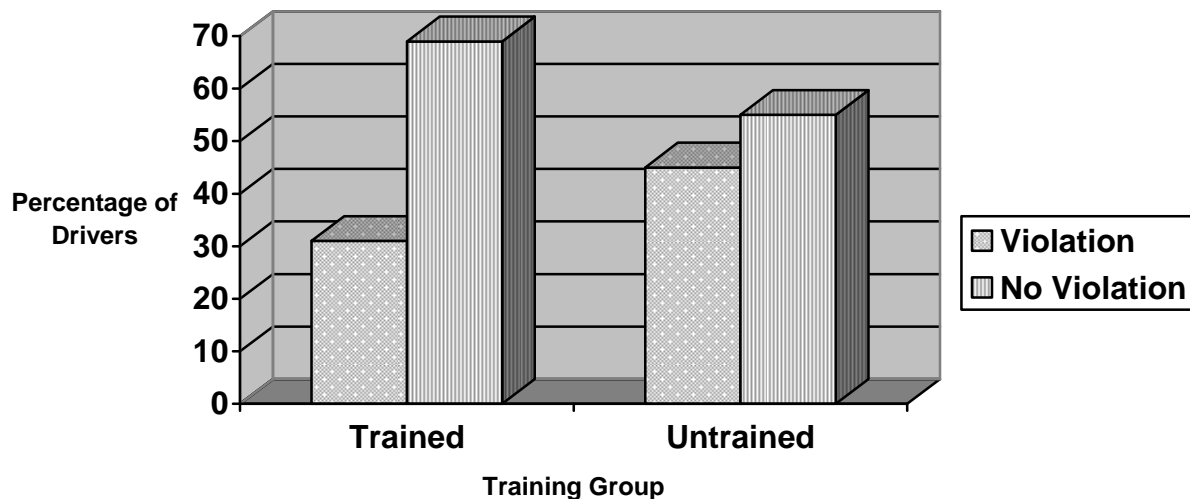


Figure 6: Percentage of Drivers Receiving Traffic Citations or Warnings.

Figure 7 provides details of the safety experience of the participants in each of the groups. Approximately 50% of drivers who had attended the defensive driving workshops had no violations and no crashes compared to 43% of the untrained participants. Approximately 13% of the drivers attending the workshops had experienced both violations and crashes compared to 23% of the untrained drivers.

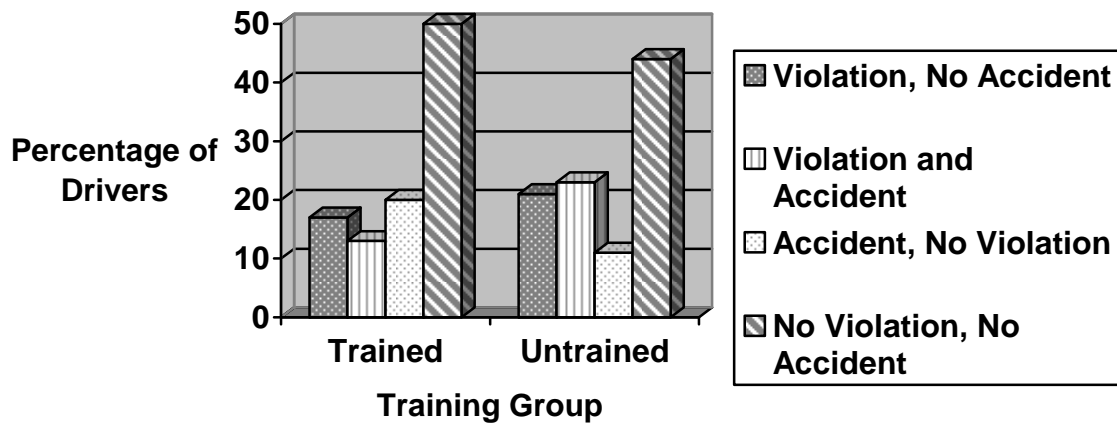


Figure 7: Safety Experience of Drivers in Trained and Untrained Groups.

5. CONCLUSIONS AND RECOMMENDATIONS

This report describes the initial year of Phase 3 of a planned three-phase effort to investigate the effects of additional driver training on the safety experience of young drivers. Phase 1 involved development of training plans and recruitment of a sample of approximately 400 teenaged drivers from central Montana who had completed high school driver education classes during June through December 2004. During Phase 2, a one day advanced defensive driving training workshop was prepared and presented to approximately ½ of the group. Facilities and instructors at the Montana D.R.I.V.E. facility (in Lewistown, MT) were provided by the Office of Public Instruction. The curriculum included multimedia classroom instruction and in-vehicle exercises (Kelly and Stanley, 2006).

Phase 3 involves following the driving histories of the recruited students at one-year intervals for a period of four years. Reports by subjects during the initial surveys at the time of training identified a relatively high frequency of minor parking lot crashes or run-off-road crashes in which there was only a small amount of damage and no reports filed. To obtain a complete picture of the safety records of the teens, all accidents including these minor crashes need to be documented.

The remaining phase of this research effort is to track the driving records of the approximately 180 young drivers who took part in the training and the approximately 180 young drivers who form the control group. The safety records of the participants in the two groups (approximately 18% of both groups had experienced crashes and 17% to 19% of both groups had received citations or warnings) were equivalent prior to the training workshops. It is planned to examine the subsequent driving records for these students in September 2007, 2008, and 2009 to determine the frequency and severity of crashes and the number of violations committed by each subject. Based on the relatively large size of the sample being used, and the random method used to assign participants to the treatment and control groups, any difference in the driving experience of these two groups can be confidently attributed to the follow-on driver safety training received by the treatment group.

In the first year after the defensive driving training workshops, there is clear evidence that the young drivers receiving training had different driving experiences than the untrained drivers. The differences were in the direction to be expected if the training workshops were effective.

In WTI's original proposal, a 10% difference between the groups in safety experience was projected. The numbers found here are fully consistent with that original hypothesis. The 31% versus 35% of drivers experiencing crashes is a 13% advantage for drivers taking the training workshops. The 31% versus 45% of drivers committing violations is a 45% advantage for the drivers taking the training workshops.

It remains to be seen whether the demonstrated advantage lasts beyond the initial year after training. Follow up surveys and reviews of the safety data for the 2006-2007 period and beyond will be conducted to evaluate whether the demonstrated advantages are more than temporary.

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